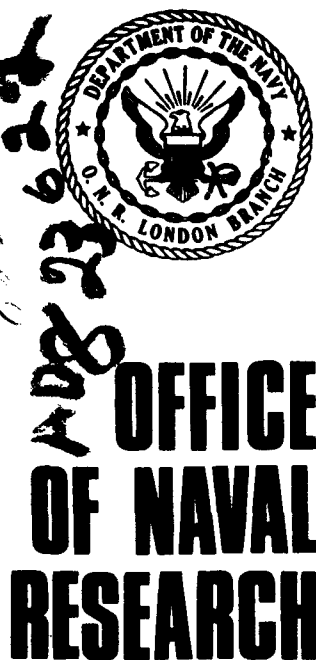


UNCLASSIFIED

AD NUMBER
AD823621
NEW LIMITATION CHANGE
TO Approved for public release, distribution unlimited
FROM Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; 21 NOV 1967. Other requests shall be referred to Office of Naval Research, Attn: Branch Office, Box 39, FPO New York 09510.
AUTHORITY
ONRL ltr, 8 Dec 1970

THIS PAGE IS UNCLASSIFIED



**BRANCH
OFFICE
LONDON
ENGLAND**

THIS REPORT IS ISSUED
FOR INFORMATION PURPOSES
ON THE UNDERSTANDING
THAT IT IS NOT A PART OF
THE SCIENTIFIC LITERATURE
AND WILL NOT BE CITED
ABSTRACTED OR REPRINTED

CONFERENCE REPORT ONRL-C-21-67

POLLUTION SYMPOSIUM

By John D. Costlow, Jr.

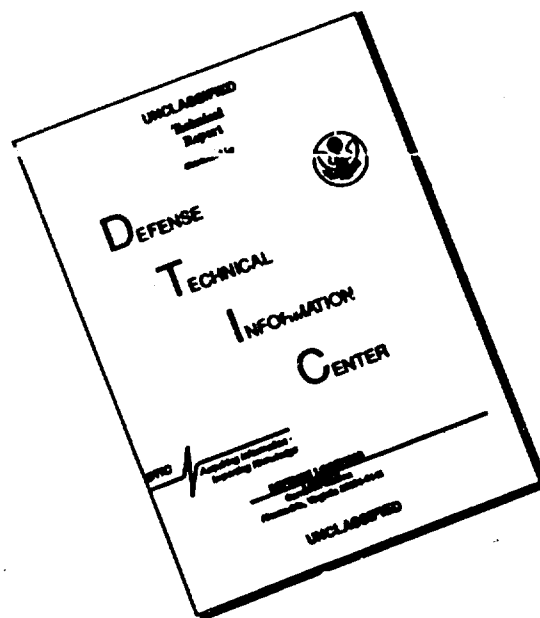
21 November 1967

DEC 11 1967

UNITED STATES OF AMERICA

THIS DOCUMENT IS SUBJECT TO SPECIAL EXPORT CONTROLS AND EACH TRANSMITTAL TO FOREIGN GOVERNMENTS OR FOREIGN NATIONALS MAY BE MADE ONLY WITH PRIOR APPROVAL OF THE COMMANDING OFFICER, OFFICE OF NAVAL RESEARCH BRANCH OFFICE, BOX 39, FPO NEW YORK 09510

DISCLAIMER NOTICE



**THIS DOCUMENT IS BEST
QUALITY AVAILABLE. THE COPY
FURNISHED TO DTIC CONTAINED
A SIGNIFICANT NUMBER OF
PAGES WHICH DO NOT
REPRODUCE LEGIBLY.**

POLLUTION SYMPOSIUM

In view of the recent interest in pollution in the marine environment, as well as the immediate and long-term problems associated with the discharge of oil and detergents in the English Channel, the International Symposium which was held at Helgoland may be especially appropriate. The occasion, Sept. 19-21, 1967, was the 75th anniversary of the Biologische Anstalt, Helgoland, and the three-day symposium scheduled a number of papers considering the general topic "Biological and Hydrographic Problems of Water Pollution in the North Sea." For the purpose of the Symposium marine pollution was defined as follows, after the SCOR-ACMRR Working Group on Marine Pollution, Paris, December 1966: "Introduction by man of substances into the marine environment resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to maritime activities including fishing, and reduction of amenities."

Prof. Dr. Otto Kinne (Director of the Anstalt) had attempted to organize the conference with particular reference to the four following sub-topics: (1) Major Sources of Pollution; (2) Biological and Hydrographical Processes Determining the Fate of Pollutants; (3) Biological and Hydrographical Consequences of Pollution; and (4) Local Aspects.

Although it was not possible for me to attend this Symposium, Kinne was kind enough to send the program and abstracts of the papers. From the abstracts it would appear that under the subject of "Major Sources of Pollution," consideration was given to industrial waste products discharged into the North Sea, i.e., heavy metals, chemicals and petrol chemicals including oil, pulp and paper waste, pesticides, detergents, radioactive materials, heat, as well as solid objects. The second major source of pollution considered was domestic waste products, including waste from food processing. Under the second sub-topic, emphasis appears to have been placed on the biological processes of dispersion, accumulation and removal, and the hydrographical counterparts which contribute to distribution and the fate of pollutants, as well as the physical-chemical interactions between toxic substances. Within the third general sub-topic, Biological and Hydrographical Consequences of Pollution, most of the emphasis seemed to have been placed on the biological consequences. This included a consideration of the response of single species as well as the response of ecosystems and communities, including competition, food chains, species composition within an ecosystem and the stability of a particular ecosystem. The hydrographical consequences dealt largely with changes in the water quality itself. Within the sub-title of "Local Aspects" some consideration was given to the role of large rivers and coastal areas in polluting the North Sea, as well as more detailed studies on specific geographically restricted localities which

permitted a comparison with areas outside the North Sea. A total of 40 papers were presented, with simultaneous translation into English, French and German which has made previous meetings at Helgoland so informative.

The London Daily Telegraph carried several articles on the Symposium which would suggest that there were periods of rather heated discussion. Evidence was presented by K.H. Schumann (Biologische Anstalt Helgoland) which indicated that chemical waste dumped by one of the major West German chemical firms would kill fish larvae. Beginning in 1969, the firm intends to dump 880 tons of diluted sulphuric acid each day seven miles north of Helgoland. A representative of the firm who was also attending the Symposium is reported to have replied, "We chemists see these results differently." The company contends that the sea currents will dissipate the acid.

There was one immediate result from the Symposium which should be of interest to American scientists. An international commission was established to draw up a list of noxious chemicals whose dumping into the rivers flowing into the North Sea should be forbidden immediately. Kinne, commenting on the fact that efforts should be made to see that the North Sea does not become the laboratory of Europe, indicated that the North Sea is shallow with an average depth of 60 ft. There is little exchange of water between the North Sea and the Atlantic Ocean and the cleanliness of the water was vital not only to the fisheries but also to those millions who spend holidays in the area.

Approximately a month later, the International Oceanographic Council completed its 55th assembly in Hamburg by setting up a special committee to study the problem of pollution in the North Sea.

The papers should be published within the next year in the Helgoland Journal and would presumably be available by writing to Prof. Dr. Otto Kinne, Biologische Anstalt Helgoland, 2 Hamburg 50, Palmallee 9, Germany.

APPENDIX

"Changes since the turn of the century in the fish fauna and the fisheries of the Oslofjord," J.T. Rudd, Universitetet i Oslo, Institut for Marine Biologi A, Frederiksgate 3, Oslo 1, Norway.

"Biochemical and dynamic circulation of nutrients in the Oslofjord," E. Fjøn, Universitetet i Oslo, Institut for Marine Biologi A, Frederiksgate 3, Oslo 1, Norway

"Die Bedeutung des Elbe-Ästuars für die Abwasserbelastung der Südlichen Nordsee in bakteriologischer Sicht," G. Rheinheimer, Kiel, Germany.

"Die Trift von Verschmutzungen an der Oberfläche der Nordsee," H. Neumann, Deutsches Hydrographisches Institut, Bernhard-Nocht-Strasse 78, Hamburg 4, Germany

"The control of radioactive pollution in a North Sea osyter fishery," A. Preston, Fisheries Laboratory, Lowestoft, Suffolk, UK.

"Changes of the sea by wastes and introduction of five classes for the disposal of wastes in the sea," G. Weichart, Deutsches Hydrographisches Institut, Bernhard-Nocht-Strasse 78, Hamburg 4, Germany.

"Progress report on a programme of insecticide analysis and toxicity-testing in relation to the marine environment," J.E. Portmann, Burnham-on-Crouch, UK.

"Various suggestions for increasing knowledge of the circulation of the North Sea waters to serve pollutant-drift studies," J.N. Carruthers, National Institute of Oceanography, Wormley, Godalming, Surrey, UK.

"Biological consequences of marine pollution, with special reference to the North Sea fisheries" P. Korringa, Rijksinst. v. Fisserijonderzoek, Haringkade 1, IJmuiden, The Netherlands.

"The hydrography of the North Sea, a review of our knowledge in relation to pollution problems," A. Lee and J. Ramster, Fisheries Laboratory, Lowestoft, Suffolk, UK.

"Zooplankton, zoobenthos, and bottom sediments as related to pollution and water exchange in the Oslofjord," F. Beyer, Universitetet i Oslo, Institut for Marine Biologi A, Frederiksgate 3, Oslo 1, Norway.

"Pollution in the harbour of Ostend (Belgium), biological and hydrographical consequences," G. Persoone (Ghent, Belgium) and N. De Pauw (Antwerp, Belgium).

"Toxicological investigations in an artificial ecosystem. A progress report on copper toxicity towards algae and daphniae," H.J. Hueck and D.M.M. Adema, Delft, The Netherlands.

"Fission-product radionuclides in sediments from the North-East Irish Sea," D.F. Jefferies, Fisheries Laboratory, Lowestoft, Suffolk, UK.

"Toxicity to fish of waste from a parathion industry at the Danish North Sea coast," J. Boëtius, Danmarks Fiskeri- og Havundersøgelses, Charlottenlund Slot, Charlottenlund, Denmark.

"Some hydrographic observations on salt brine pollution in the Kiel Fjord," J.M. Gieskes, Kiel, Germany.

"Biologisches Auswirkungen von gereinigten Abwässern einer Öl-Raffinerie in einem Vorlandgebiet an der Nordsee," D. König, Landesamt für Wasserwirtschaft, Düsternbrooker Weg 104-108, Kiel, Germany.

"Deichsicherung mit Verhüttungsrückständen," M. Haucke, Dortmund, Germany.

"The influence on the fishery in the lower regions of the river Elbe owing to civilization," H. Mann, Bundesforschungsanstalt für Fischerei, Institut für Küsten- und Binnenfischerei, Palmaille 9, Hamburg-Altona 1, Germany.

"Versuch einer Klassifikation industrieller Abfallprodukte in bezug auf die Möglichkeit einer Versenkung auf See," G. Tomczak, Deutsches Hydrographisches Institut, Bernhard-Nocht-Strasse 78, Hamburg 4, Germany.

"Ermittlung von Bewegungsvorgängen im Meere und in Flussmündungen zur Untersuchung des Transportes von Verunreinigungen," H.G. Ramming, Institut für Meereskunde, Universität Hamburg, Heimbudenstrasse 71, Hamburg 13, Germany.

"Physiologische Untersuchungsmethoden zur Bestimmung des Schädlichkeitsgrades von Abwasserfugten in Süß-, Brack- und Salzwasser," E. Halsband, Bundesforschungsanstalt für Fischerei, Institut für Küsten- und Binnenfischerei, Palmaille 9, Hamburg-Altona 1, Germany.

"Die Küstenfischerei in der Unter- und Aussenweser und die Abwasserbedrohung," W. Nolte, Bremerhaven, Germany.

"Der Einfluss menschlicher Einwirkungen auf Fortflanzung und Laichen litoraler mariner Bodenevertebraten," S.A. Mileikovsky, Institute of Oceanology, Academy of Sciences USSR, 1, Sadovaya, Moscow J-387, USSR.

"Verunreinigung des Meeres durch Kohlenwasserstoffe und ihr Einfluss auf marine Organismen," O.G. Mironov, Sevastopol, USSR.

"Die Wirkungen der Ölverschmutzung des Meeres auf die Populationen von See- und Küstenvögeln," F. Goethe, Institut für Vogelforschung, "Vogelwarte Helgoland," Wilhelmshaven, Germany.

"Untersuchungen zur Verträglichkeit von Meer- und Brackwasser für Ciliaten des Saprobiensystems der Wassergütebeurteilung," H. Bick, Bonn, Germany.

"Some effects of heated effluents on marine phytoplankton," P.D.V. Savage, Southampton, UK.

"Hauptquellen häuslicher Abwässer und deren Bedeutung für die Wasserverunreinigung der Nordsee," H. Kayser, Biologische Anstalt Helgoland, Helgoland, Germany.

"Über die hydrographische Struktur der Deutschen Bucht im Hinblick auf die Verschmutzung in der Konvergenzzone," E. Goedecke, Deutsches Hydrographisches Institut, Bernhard-Nocht-Strasse 78, Hamburg 4, Germany.

"Biologische Konsequenzen sulfathaltiger Industrieabwässer," O. Kinne and E.-H. Schumann, Biologische Anstalt Helgoland, Helgoland, Germany.

"Horizontal and vertical exchanges and diffusion in the water masses of the Oslofjord," H.G. Gade, Bergen, Norway.

"Management of the national estuarine resource of the United States," T.A. Wastler, Washington, D.C.

"Die Wirkung der Wasserverunreinigungen auf das Benthos ausserhalb Göteborgs," P. Tulkki, Zoological Institute, University of Turku, Turku, Finland.

"Introduction to the studies of pollution in the Oslofjord," J.T. Rudd, Universitetet i Oslo, Institut for Marine Biologi A, Frederiksgate 3, Oslo 1, Norway.

"The fauna of a polluted shore in the Firth of Forth," J.C. Smith, Paisley, UK.

"Vergleichende Untersuchungen über Hydrochemie und Plankton deutscher Flussmündungen," H. Köhl, Bundesforschungsanstalt für Fischerei, Institut für Küsten- und Binnenfischerei, Labor Cuxhaven, Bei der Alten Liebe 1, Cuxhaven, Germany.

"Some effects of pollution on the bottom of the Gullmarfjord,"
E. Leppäkoski, Fiskelbäckskil, Norway.

"Verschmutzung der Gewässer durch Aussenbordmotore und die Wirkung
auf Fauna und Flora," D. Lüdemann, Berlin, Germany.

"Surface pollution and light extinction in the Oslofjord," G. Munthe-Kaas,
Norsk institutt for vannforskning, Gaustadalleen 25, Oslo, Norway.

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R&D		
<i>(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)</i>		
1. ORIGINATOR'S ACTIVITY (Corporate author)		2a. REPORT SECURITY CLASSIFICATION
Office of Naval Research, Branch Office London, England		2b. GROUP
3. REPORT TITLE		
POLLUTION SYMPOSIUM		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)		
N.A.		
5. AUTHOR(S) (Last name, first name, initial)		
JOHN D. COSTLOW, Jr.		
6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
21 November 1967	6	40
8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)	
N.A.	ONRL-C-21-67	
a. PROJECT NO.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
N.A.	N.A.	
c.		
d.		
10. AVAILABILITY/LIMITATION NOTICES This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of the Office of Naval Research, Branch Office, Box 39, FPO New York 09510.		
11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY	
N.A.	N.A.	
13. ABSTRACT		
<p>An account is given of the three-day symposium "Biological and Hydrographic Problems of Water Pollution in the North Sea" held at Helgoland, Germany in September 1967. The forty papers which were presented considered various aspects of the major sources of pollution, the biological and hydrographical processes determining the fate of pollutants, the biological and hydrographical consequences of pollution, and general and local aspects of pollution.</p>		

DD FORM 1473
JAN 64

UNCLASSIFIED

UNCLASSIFIED

Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Pollution North Sea Marine Biology Hydrography Helgoland						

INSTRUCTIONS

1. **ORIGINATING ACTIVITY:** Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization (*corporate author*) issuing the report.

2a. **REPORT SECURITY CLASSIFICATION:** Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.

2b. **GROUP:** Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.

3. **REPORT TITLE:** Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.

4. **DESCRIPTIVE NOTES:** If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.

5. **AUTHOR(S):** Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.

6. **REPORT DATE:** Enter the date of the report as day, month, year, or month, year. If more than one date appears on the report, use date of publication.

7a. **TOTAL NUMBER OF PAGES:** The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

7b. **NUMBER OF REFERENCES:** Enter the total number of references cited in the report.

8a. **CONTRACT OR GRANT NUMBER:** If appropriate, enter the applicable number of the contract or grant under which the report was written.

8b, 8c, & 8d. **PROJECT NUMBER:** Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

9a. **ORIGINATOR'S REPORT NUMBER(S):** Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.

9b. **OTHER REPORT NUMBER(S):** If the report has been assigned any other report numbers (*either by the originator or by the sponsor*), also enter this number(s).

10. **AVAILABILITY/LIMITATION NOTICES:** Enter any limitations on further dissemination of the report, other than those

imposed by security classification, using standard statements such as:

- (1) "Qualified requesters may obtain copies of this report from DDC."
- (2) "Foreign announcement and dissemination of this report by DDC is not authorized."
- (3) "U. S. Government agencies may obtain copies of this report directly from DDC. Other qualified DDC users shall request through _____."
- (4) "U. S. military agencies may obtain copies of this report directly from DDC. Other qualified users shall request through _____."
- (5) "All distribution of this report is controlled. Qualified DDC users shall request through _____."

If the report has been furnished to the Office of Technical Services, Department of Commerce, for sale to the public, indicate this fact and enter the price, if known.

11. **SUPPLEMENTARY NOTES:** Use for additional explanatory notes.

12. **SPONSORING MILITARY ACTIVITY:** Enter the name of the departmental project office or laboratory sponsoring (paying for) the research and development. Include address.

13. **ABSTRACT:** Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.

It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as (TS), (S), (C), or (U).

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. **KEY WORDS:** Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, roles, and weights is optional.

DD FORM 1 JAN 64 1473 (BACK)

UNCLASSIFIED